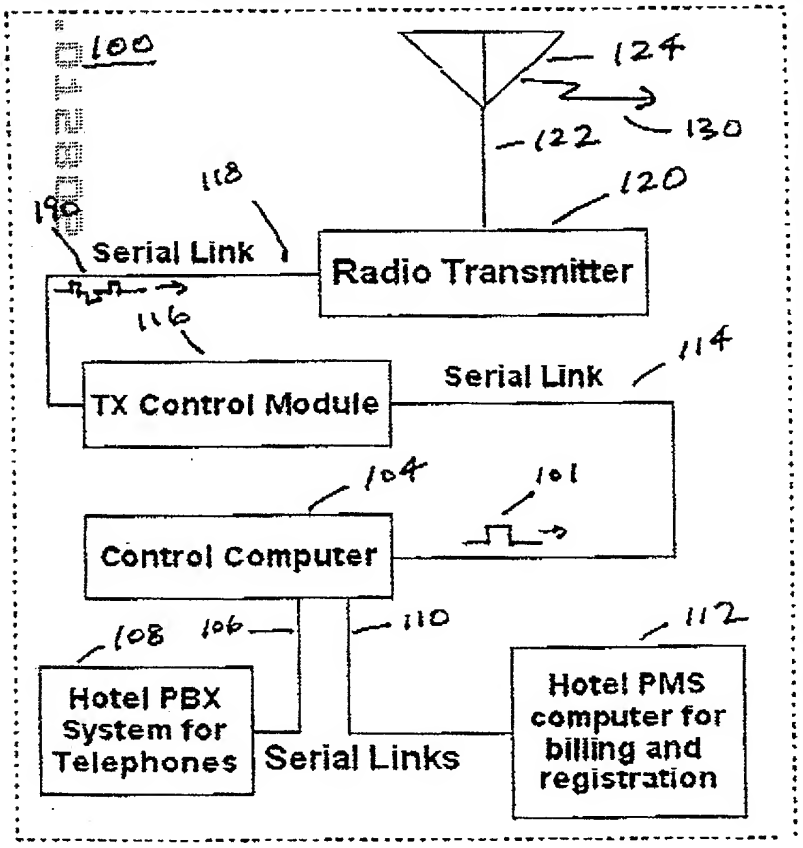
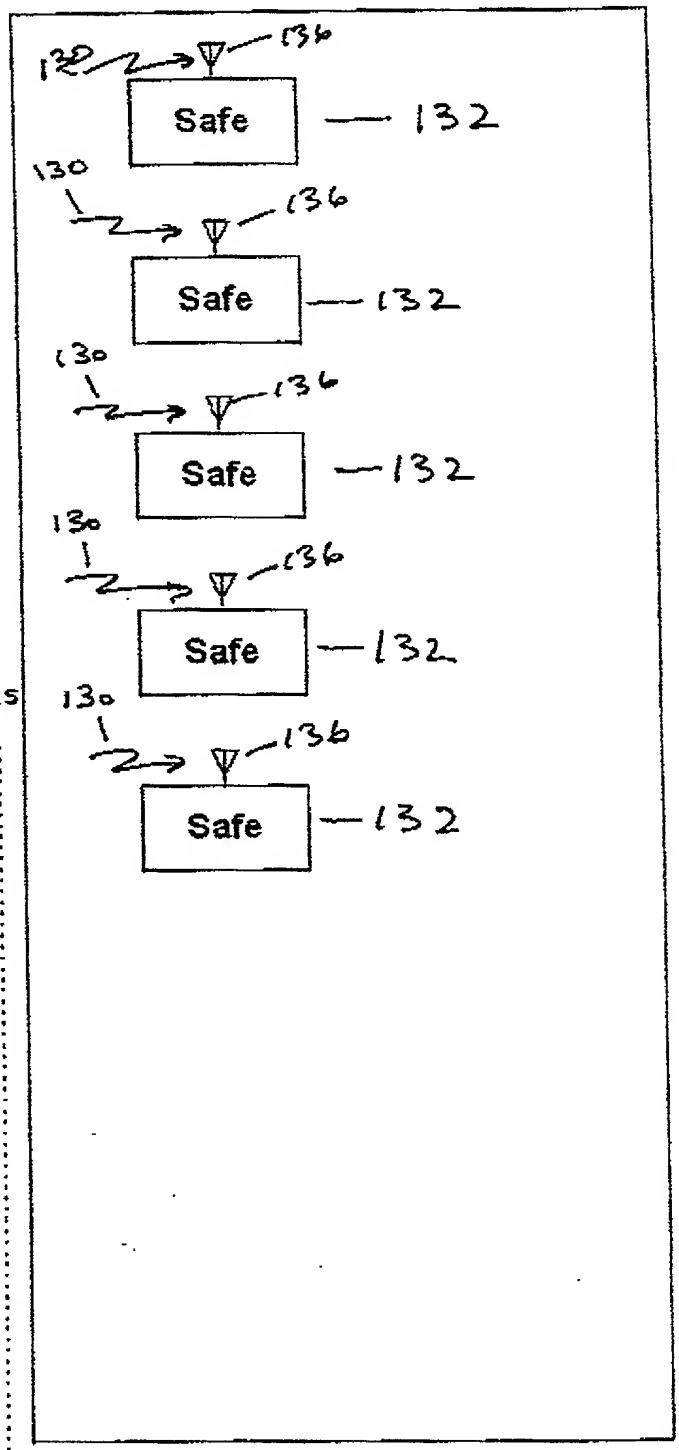
FIG. 1


Remote Control System to Activate Safe Operations
100
124
122
130
118
120
190
Serial Link
Radio Transmitter
116
114
Serial Link
TX Control Module
104
101
Control Computer
108
106
110
112
Hotel PBX System for Telephones
Serial Links
Hotel PMS computer for billing and registration


Hotel with safes on each floor
130
136
Safe
132

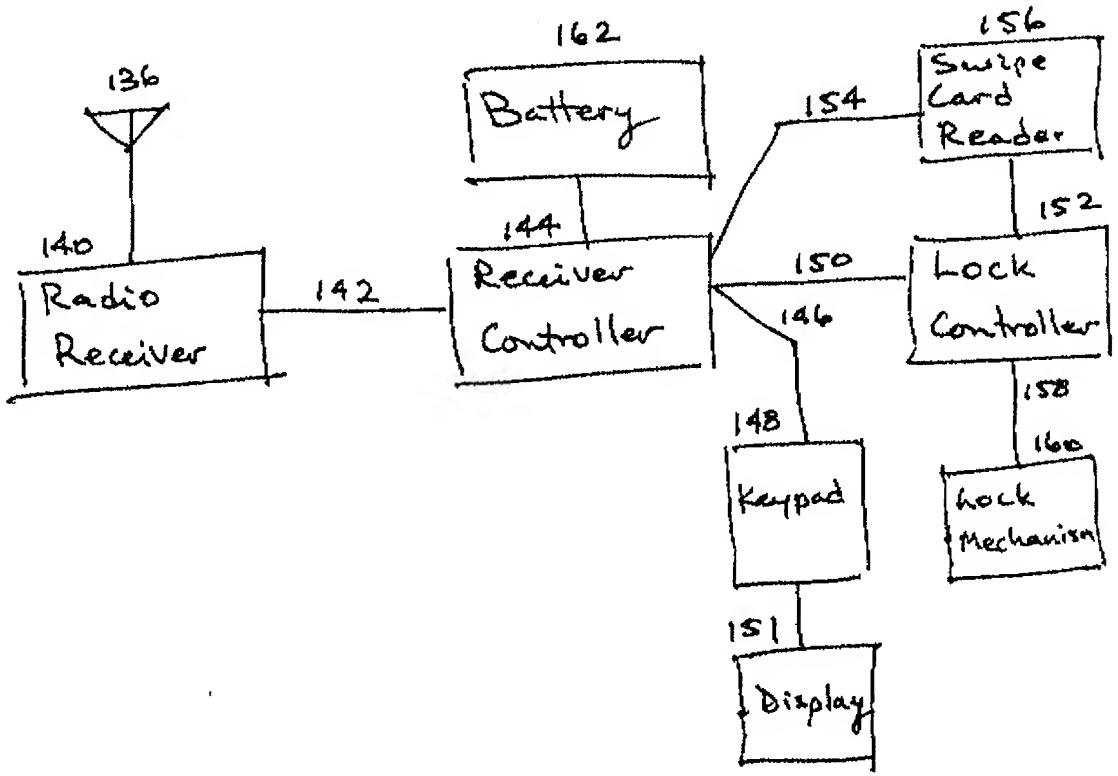

136
140
Radio Receiver
142
162
Battery
144
Receiver Controller
154
156
Swipe Card Reader
152
150
Lock Controller
146
148
Keypad
158
160
Lock Mechanism
151
Display

FIG. 2

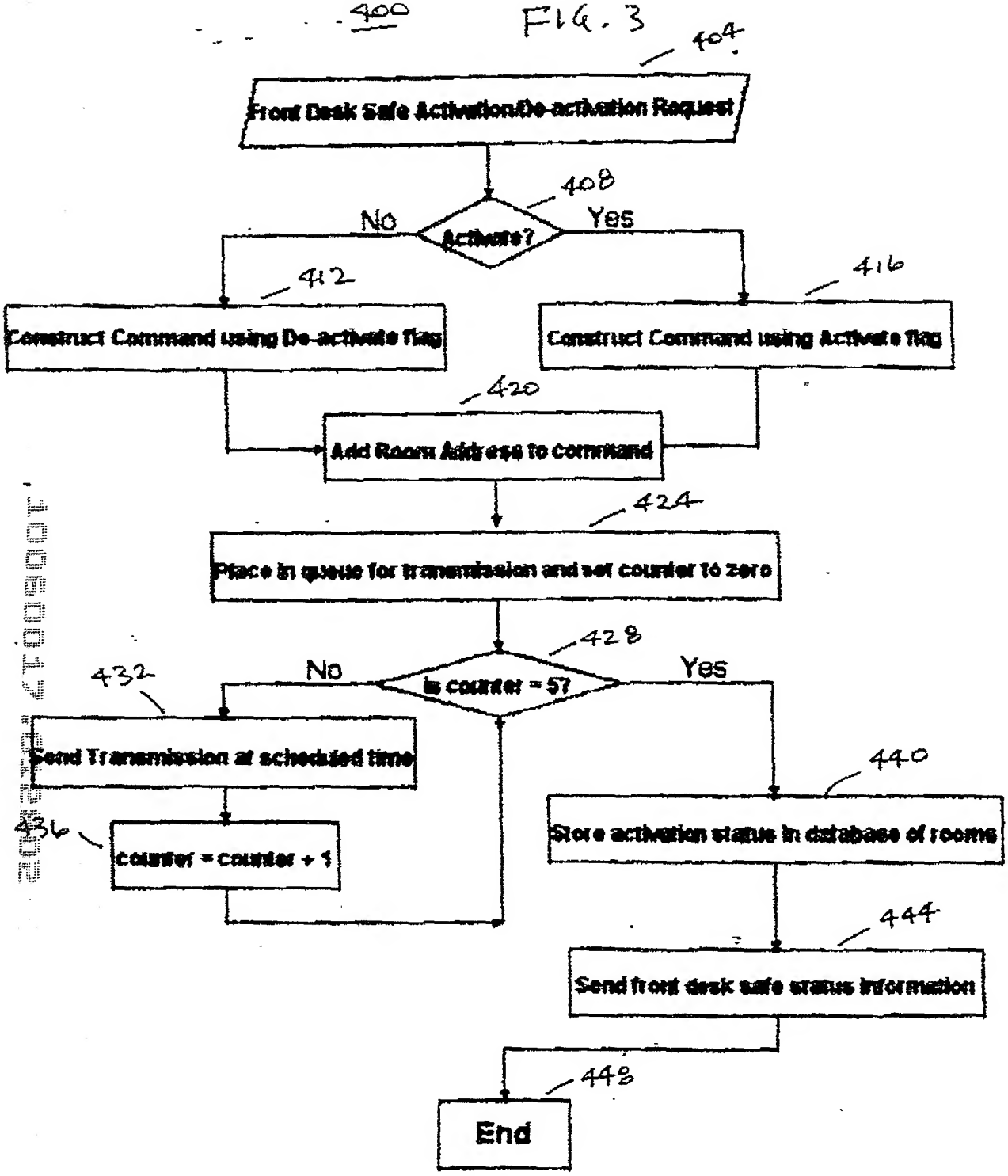
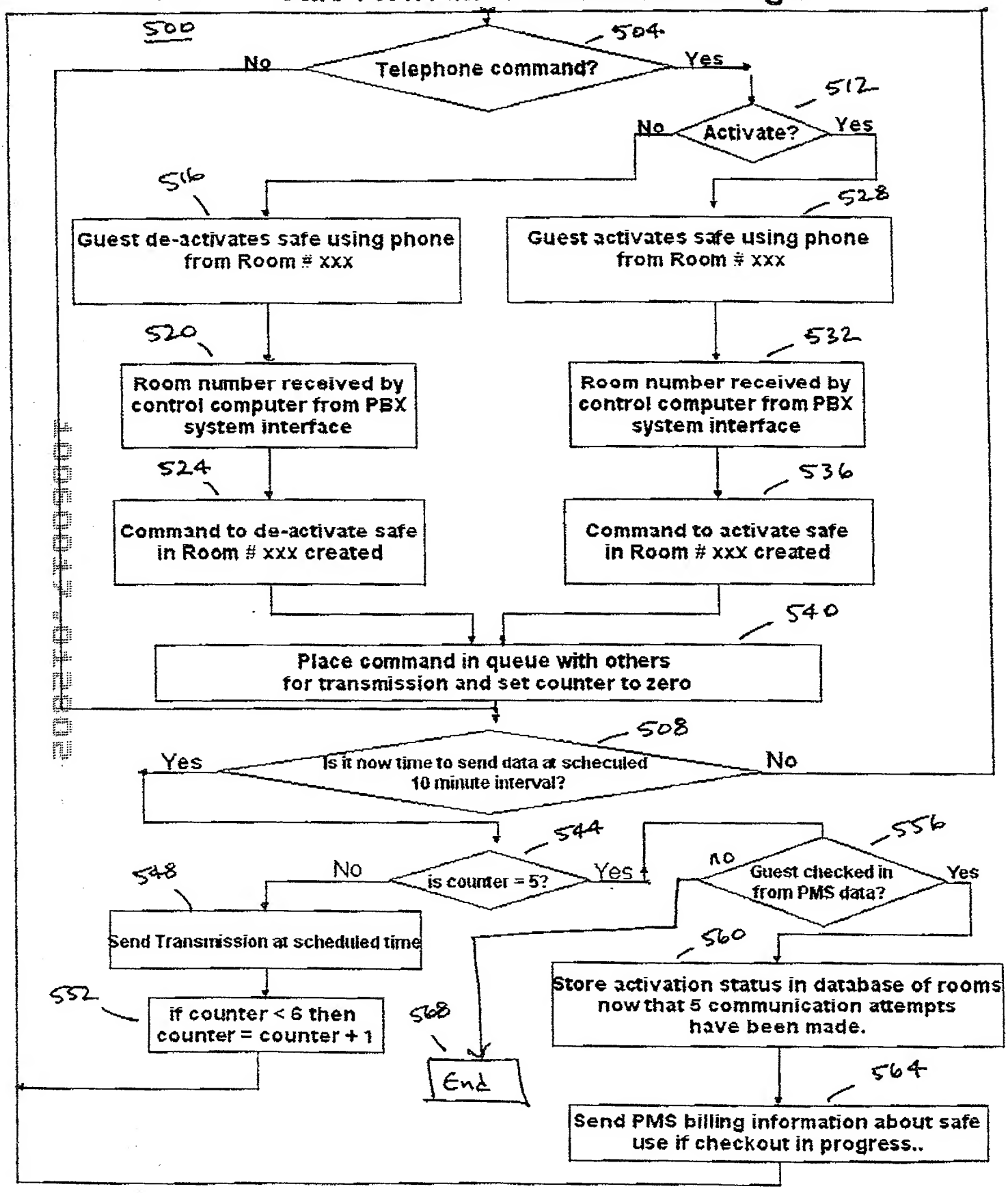

400
FIG. 3
404
Front Desk Safe Activation/De-activation Request
408
Activate?
No
Yes
412
Construct Command using De-activate flag
416
Construct Command using Activate flag
420
Add Room Address to command
424
Place in queue for transmission and set counter to zero
428
Is counter = 5?
No
Yes
432
Send Transmission at scheduled time
436
counter = counter + 1
440
Store activation status in database of rooms
444
Send front desk safe status information
448
End

FIG. 4 Safe Activation Software Design



Doc. No. 2005-0126

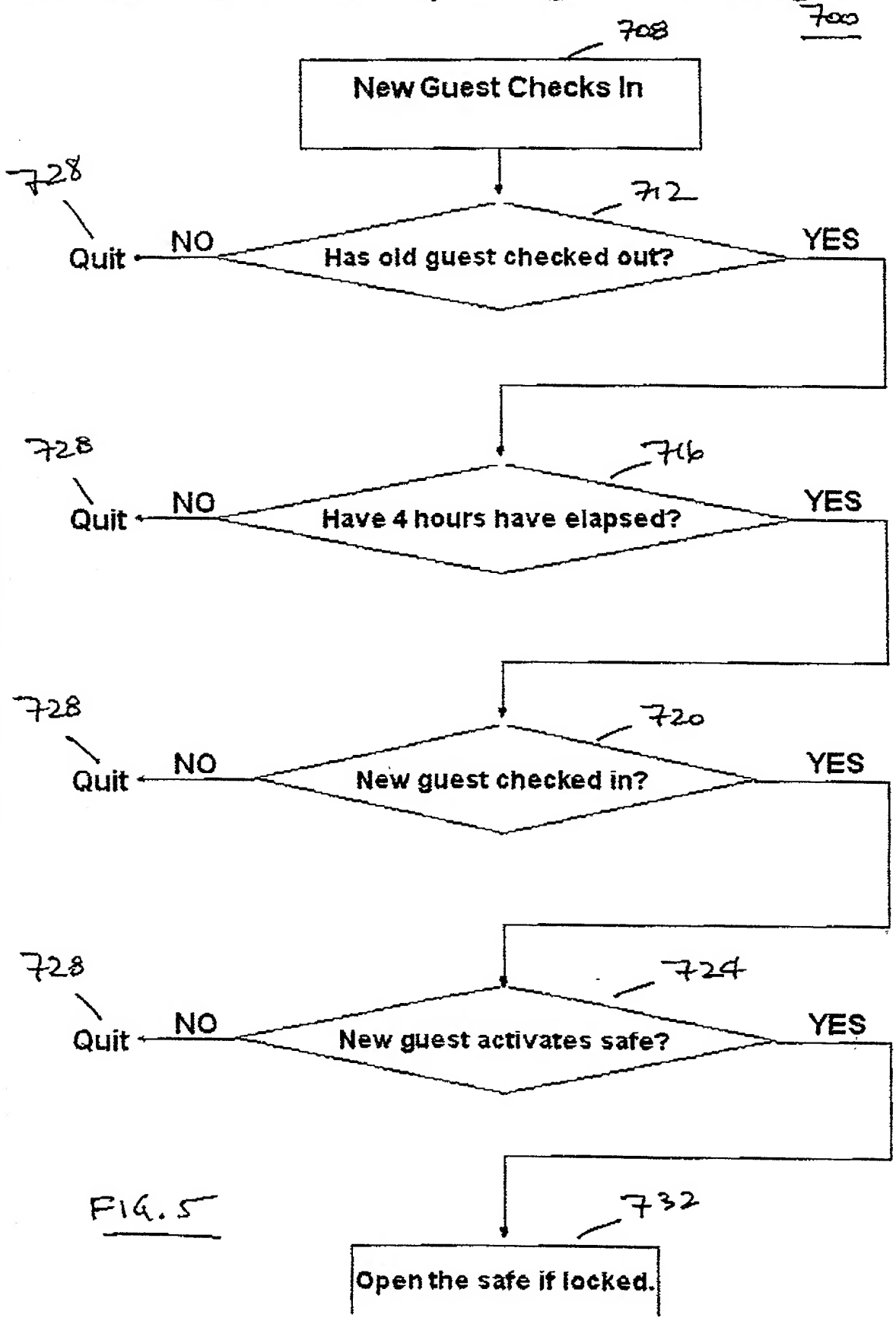


FIG. 5

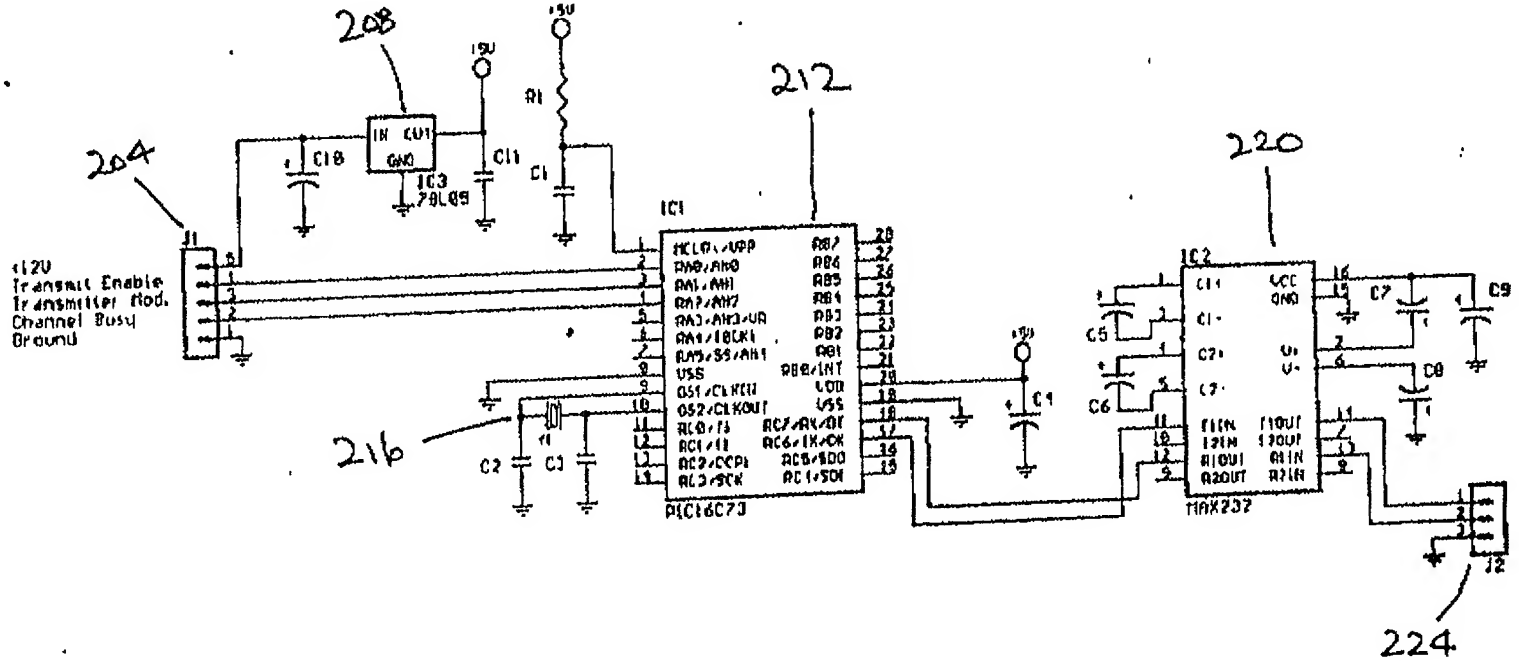

200
208
212
220
204
216
224
+12V
Transmit Enable
Transmitter Mod.
Channel Busy
Ground
J1
IC3
78L05
IC1
PIC16C73
IC2
MAX232
J2
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
R1

FIG. 6

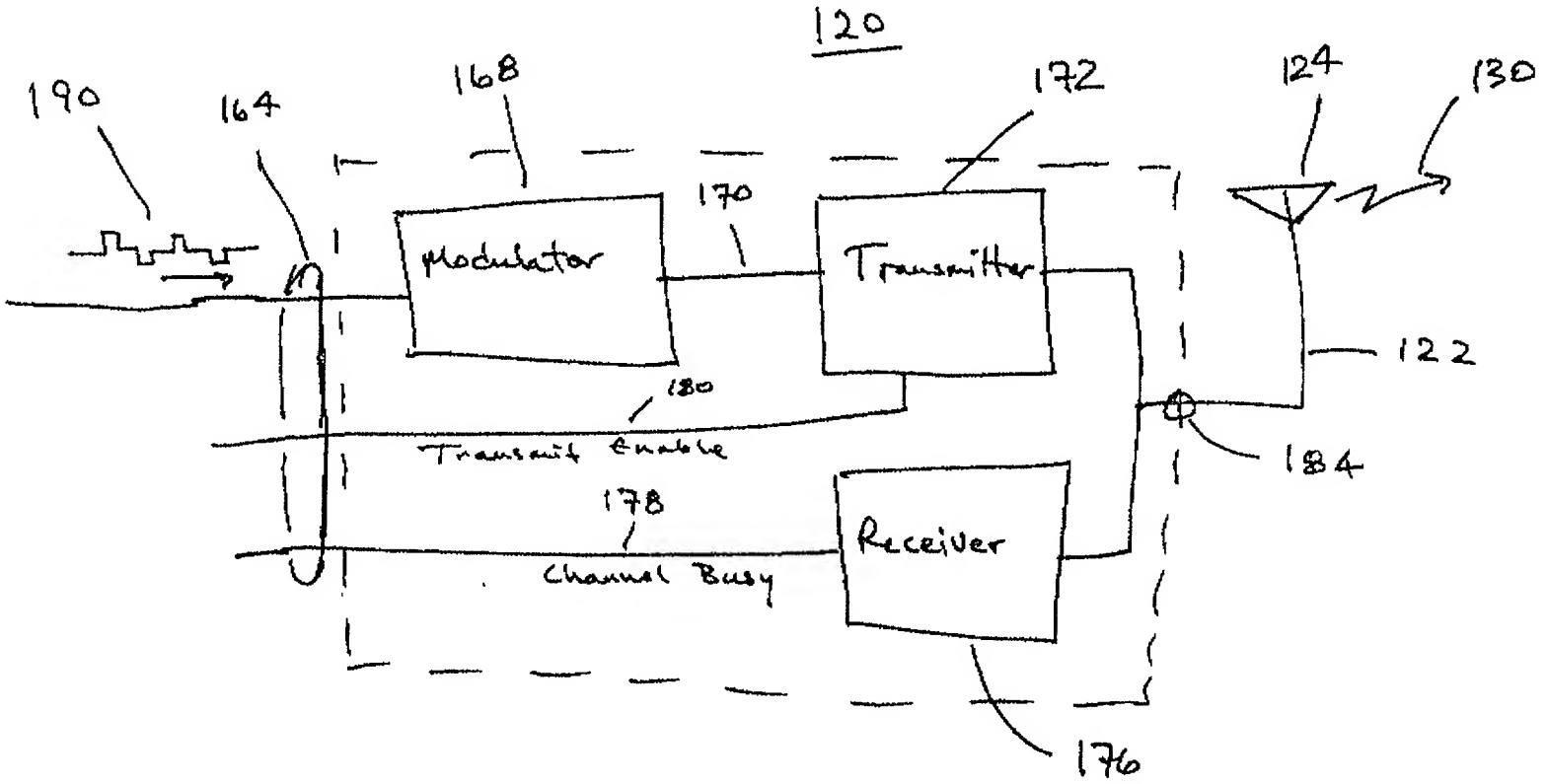

120
190
164
168
172
124
130
170
Modulator
Transmitter
122
180
Transmit Enable
184
178
Receiver
Channel Busy
176

FIG. 7

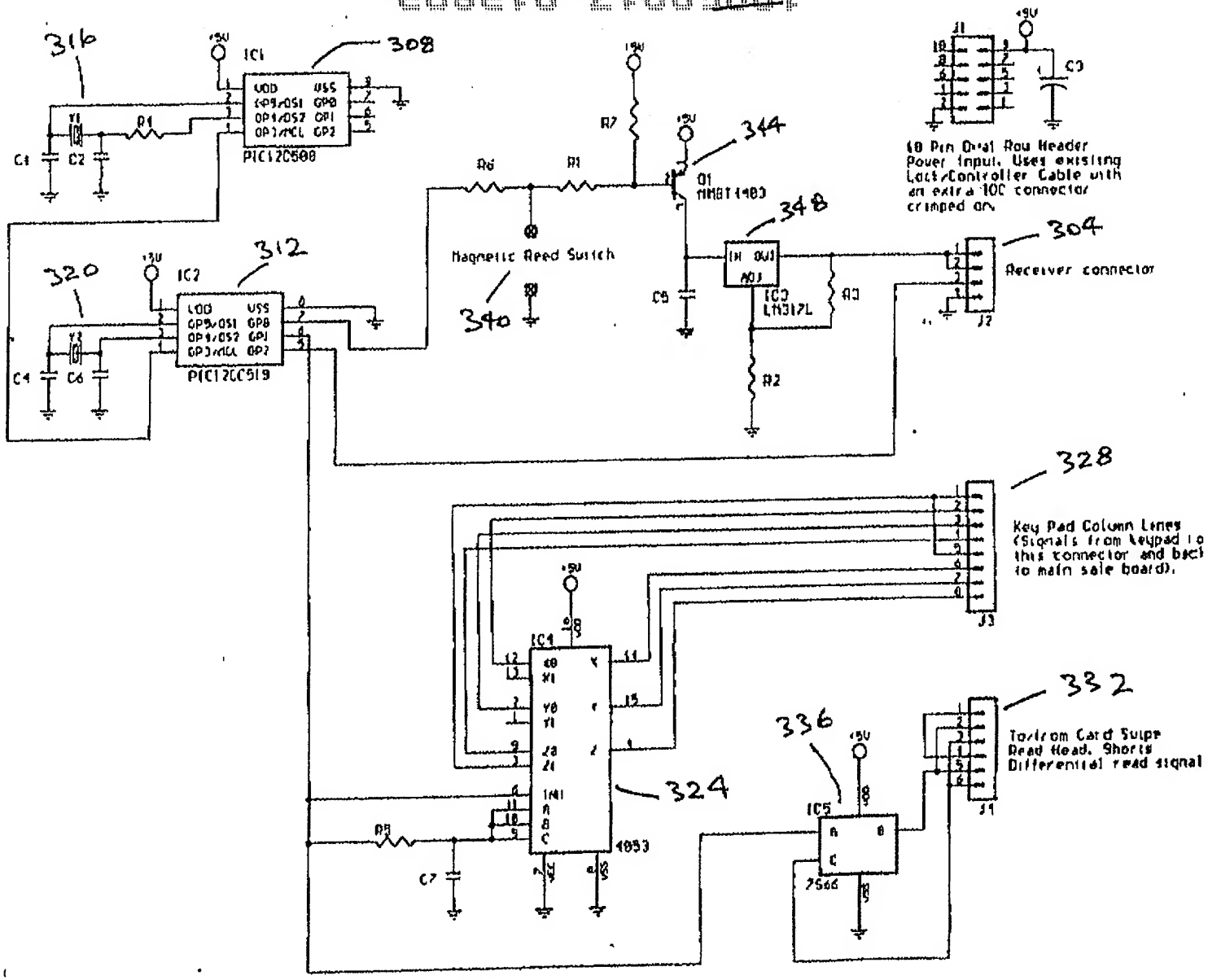

306
316
308
IC1
PIC12C508
C1
C2
R1
320
312
IC2
PIC12C519
C4
C6
R6
R7
R1
344
Q1
MMBT4403
Magnetic Reed Switch
340
348
IC3
LM317L
C5
R3
R2
304
Receiver connector
10 Pin Dual Row Header
Power Input. Uses existing
Lock/Controller Cable with
an extra 10C connector
crimped on.
C3
328
Key Pad Column Lines
(Signals from keypad to
this connector and back
to main sole board).
IC4
4053
324
R8
C7
336
IC5
7566
332
To/from Card Swipe
Read Head. Shorts
Differential read signal

FIG. 8

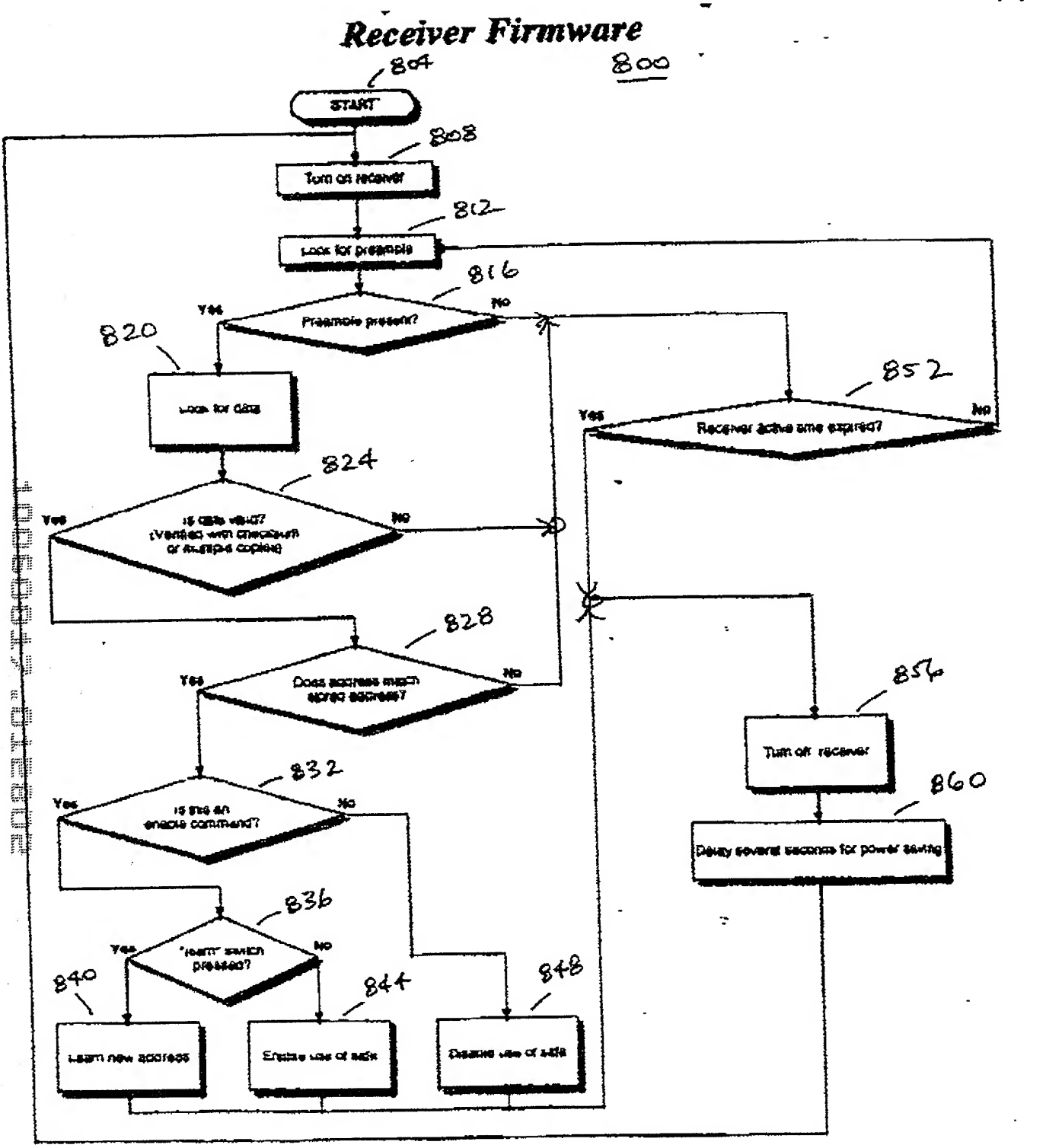

Receiver Firmware
800
804
START
808
Turn on receiver
812
Look for preamble
816
Preamble present?
Yes
No
820
Look for data
824
Is data valid?
(Verified with checksum or multiple copies)
Yes
No
828
Does address match stored address?
Yes
No
832
Is this an enable command?
Yes
No
836
"learn" switch pressed?
Yes
No
840
Learn new address
844
Enable use of aids
848
Disable use of aids
852
Receiver active time expired?
Yes
No
856
Turn off receiver
860
Delay several seconds for power saving

FIG. 9

Full Building Scan Technique for Safe Battery Optimizatio

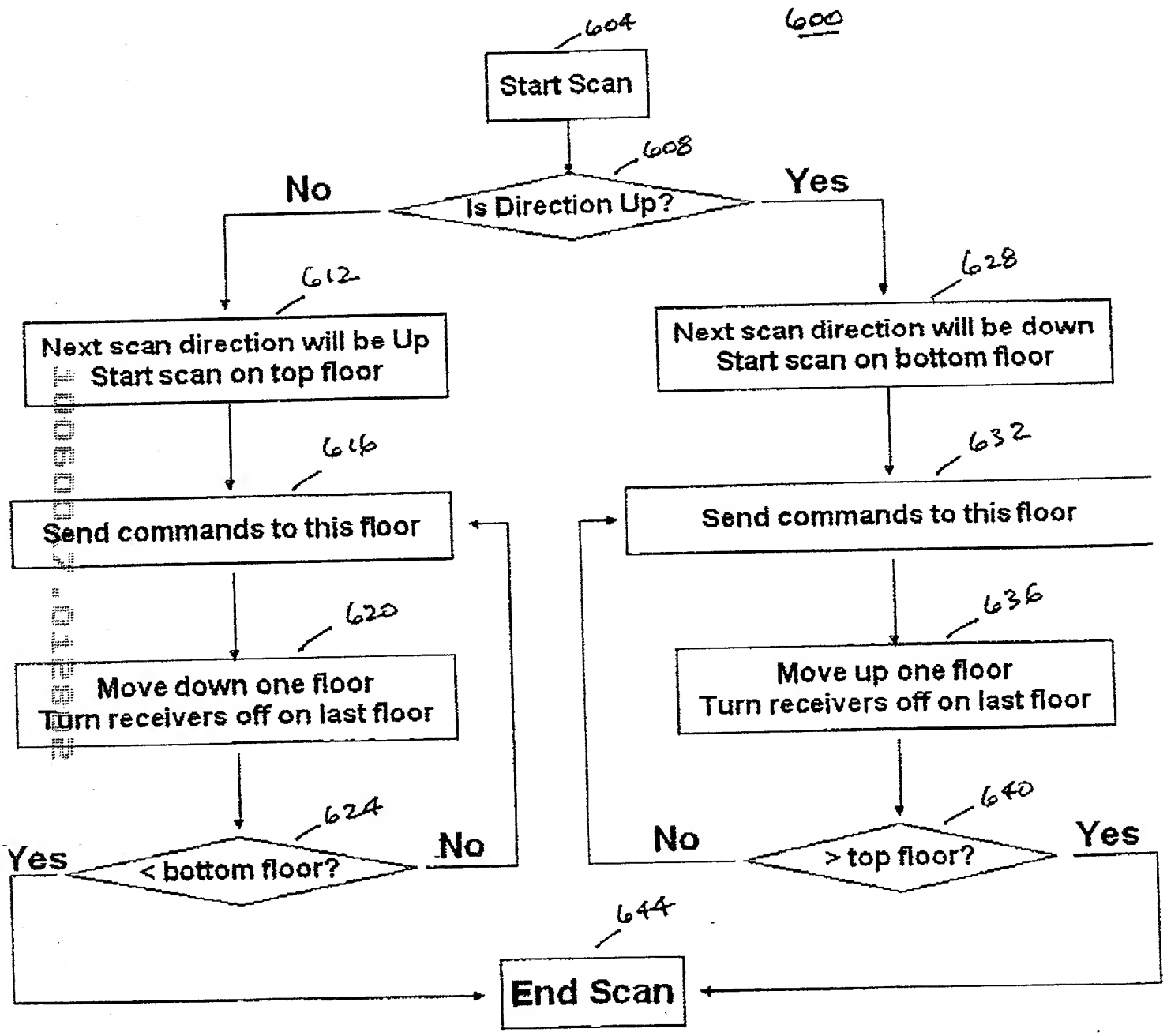


FIG. 10